"ON FARM RESEARCH" WITH *Phaseolus vulgaris* L. - AN STRATEGY FOR YIELD IMPROVEMENT.

IRAJÁ F. ANTUNES*; EXPEDITO P. SILVEIRA*, FERNANDO A. R. ALVESand GESNER N. OYARZÁBAL***, *EMBRAPA/CPACT, C.POSTAL 403, 96001-970, PELOTAS, RS-BRASIL; **EMATER, C.POSTAL 406, 96001-970, PELOTAS, RS-BRASIL; ***EMATER, RUA BOTAFOGO 1051, 90150-053, PORTO ALEGRE, RS-BRASIL.**

The state of Rio Grande do Sul (US$ 4,264,00, 1994-per capita annual income) despite being considered one of the most developed states in Brazil, has its dry bean production based on small-scale farming, comprising about 200 000 farmers which produce around 192 000 t in a total area of 220 000 ha (1995). Starting about 1974, due mainly to the lack of federal economic support for production (then, directioned to cash crops) and to the extinction of direct federal research work at state level, there was a steady decline on dry bean yield in Rio Grande do Sul (Fig. 1). As result of a claim of this agricultural segment, federal research on dry bean, has been reundertaken in late 1986. With the aim to evaluate promising breeding lines for future release as new cultivars, but also with the purpose of difusing just-released cultivars, the bean research team of CPACT/EMBRAPA, together with official extension agents, designed a "on-farm research" project, that became operative in 1990/91 crop year. The framework of the system consists in putting promising lines, just-released cultivars and the farmer's cultivar (as check), in a comparative trial consisted of individual plots of four 4m-rows of each entry, with 0.50m between rows and with 12-15 seeds/m, without replication. This comparative trial was labeled as Demonstration Unity (UD). Population plot corresponds to 240 000 plants/ha. By harvest, a field day is performed where the attributes of each genotype are discussed. The three central meters of the two central rows are harvested and seeds weighted after evaluation of flowering date, disease reaction, lodging, adaptation, as well as extention agent and farmers judgment. The evaluation of the promising lines is added to that of the oficial experimental network in order to release new cultivars. In the other hand, the seeds derived from just-released cultivars may be used as source for new increments, that act as support for further difusion of the most adapted cultivars within each of the test locations.

Part of results, shown in Table 1, make evident that, for the top four genotypes (based on official experimental network data), there is a reasonable coincidence with the evaluation from the UD's. From the stand point of yield improvement in Rio Grande do Sul, it can be seen in Figure 1 that has ocurred a sharp increase from 1992 on. Another testimony of the favorable responses obtained from the application of this metodology, is the increase verified in the Santa Cruz do Sul region, whitin one of the most important production areas, where mean yield changed from 900 to 1 200 kg/ha (from 1992 to 1995).

Table 1. Mean yield of top four genotypes in State trials (EEF) and "on farm" experiments (UDs) in Rio Grande do Sul State, from 1991/92 to 1993/94.

1991/92				1992/93			
EEFs(13)*	kg/ha	UDs(19)	kg/ha	EEFs(11)	kg/ha	UDs(37)	kg/ha
Minuano	2249	Minuano	2880	IAPAR31	2508	FT 206	2709
CNF5491	2241	CNF5491	2710	Minuano	2397	Minuano	2253
IAPAR31	2174	Carioca	2700	CNF5491	2363	Guapo Br.	2134
Macotaço	2062	Macanudo	2630	Macotaço	2306	Carioca	2166
1993/94				**1994/95**			
EEFs(10)	kg/ha	UDs(50)	kg/ha	EEFs(10)	kg/ha	UDs(42)	kg/ha
IAPAR31	2485	D.Negro	2373	Minuano	2335	IAPAR31	2290
Minuano	2335	Pampa	2350	IAPAR31	2290	FT Nobre	2202
Macotaço	2273	FT 206	2333	Macotaço	2274	Macotaço	2165
FTNobre	2257	IAPAR31	2295	FT Nobre	2257	Carioca	2118

* Number between parenthesis represent number of trials.

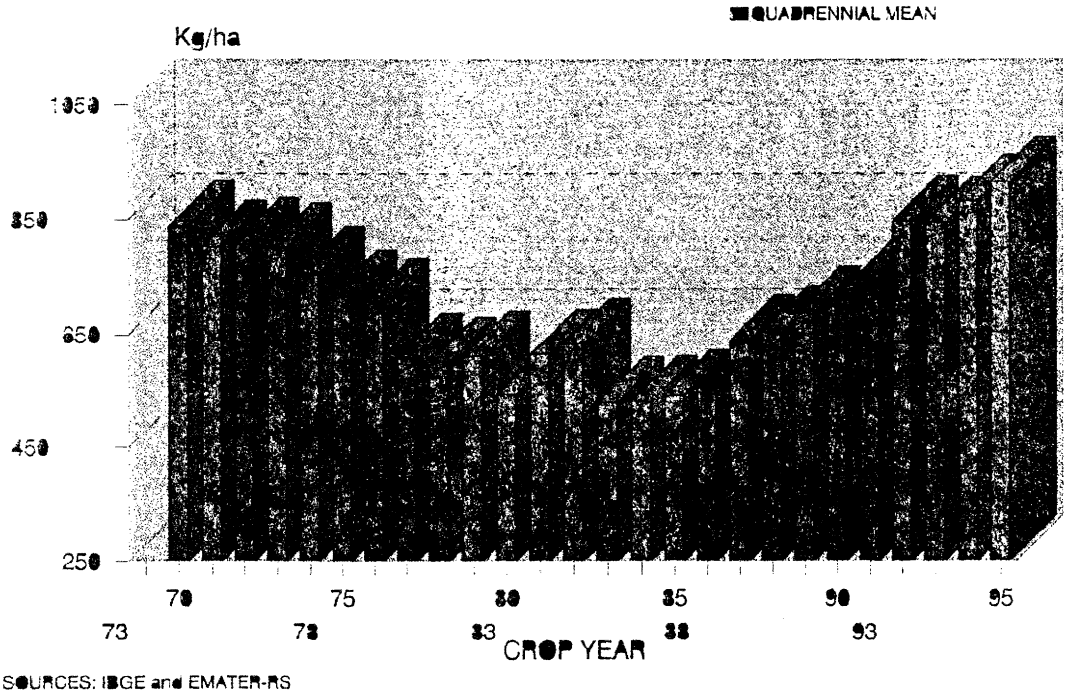

FIGURE 1 .Dry bean quadrennial mean in Rio Grande do Sul from 1970 to 1995.